CLAIMS:

1. An actuator comprising:

a core;

a coil attached to the core and arranged and constructed to produce a magnetic field, wherein the core provides a path of the magnetic field;

a rotor rotatably mounted within the core, so that the rotor rotates in response to the magnetic field produced by the coil; and

an IC attached to the core and electrically connected to the coil, wherein the distance between the IC and the coil is determined based on a permissible temperature of the IC, so that the IC is not heated to substantially exceed the permissible temperature.

2. An actuator as in claim 1, further including a connector connected to the IC, so that a power source voltage and a control signal are supplied to the IC via the connector, wherein the IC supplies an excitation current to the coil based upon the control signal.

3. An actuator as in claim 1, wherein the coil is positioned on one side of the core.

4. An actuator as in claim 3, wherein the IC is positioned on the side opposite to the coil.

5. An actuator as in claim 1, wherein the IC is positioned adjacent to a part of the core that is adapted to contact a heat dissipation member.

6. An actuator as in claim 1, wherein the IC is positioned such that a distance between a center of the IC and a part of the core that is adapted to contact a heat dissipation member is smaller than a distance between the center of the IC and a central axis of the coil.

7. An actuator as in claim 1, wherein a molding material is molded integrally with the actuator, so that the IC is fixed in position relative to the core by the molding material.

8. An actuator as in claim 7, wherein the molding material substantially encloses the IC.

9. An actuator as in claim 7, wherein the molding material is made of heat-resistant resin.

10. An actuator as in claim 5, wherein the heat dissipation member is a part of an object that is driven by the actuator.

11. An actuator as in claim 10, wherein the object driven by the actuator is a throttle device that includes a throttle body as the heat dissipation member.

12. An actuator as in claim 11, wherein the throttle body is made of material that has high heat conductivity.

13. An actuator as in claim 5, further including a spacer disposed between the core and an object driven by the actuator, so that the part of the core contacts the heat dissipation member via the spacer.

14. An actuator as in claim 13, wherein the spacer is made of material that has high heat conductivity.

15. An actuator as in claim 6, wherein the heat dissipation member is a part of an object that is driven by the actuator.

16. An actuator as in claim 15, wherein the object driven by the actuator is a throttle device that includes a throttle body as the heat dissipation member.

17. An actuator as in claim 16, wherein the throttle body is made of material that has high heat conductivity.

18. An actuator as in claim 6, further including a spacer disposed between the core and an object driven by the actuator, so that the part of the core contacts the heat dissipation member via the spacer.

19. An actuator as in claim 18, wherein the spacer is made of material that has high heat conductivity.

20. An actuator comprising:

a connector arranged and constructed to be connected to a power source and to receive a control signal;

a coil arranged and constructed to produce a magnetic field when exited;

an IC arranged and constructed to supply an excitation current to the coil based on the control signal, wherein the excitation current is greater than a current of the control signal;

a core arranged and constructed to provide a path of the magnetic field of the coil;

a rotor disposed within a part of the core; wherein:

the coil is disposed on one side of the core; and

the IC is attached to the core on the side opposite to the coil.

21. An actuator comprising:

a connector arranged and constructed to be connected to a power source and to receive a control signal;

a coil arranged and constructed to produce a magnetic field when exited;

an IC arranged and constructed to supply an excitation current to the coil based on the control signal, wherein the excitation current is greater than a current of the control signal;

a core arranged and constructed to provide a path of the magnetic field of the coil;

a rotor disposed within a part of the core; wherein:

the coil is disposed on one side of the core; and

the IC is positioned adjacent to a part of the core that is adapted to contact a heat dissipation member.

22. An actuator comprising:

a connector arranged and constructed to be connected to a power source and to receive a control signal;

a coil arranged and constructed to produce a magnetic field when exited;

an IC arranged and constructed to supply an excitation current to the coil based on the control signal, wherein the excitation current is greater than a current of the control signal;

a core arranged and constructed to provide a path of the magnetic field of the coil;

a rotor disposed within a part of the core; wherein:

the coil is disposed on one side of the core; and

the IC is positioned such that a distance between a center of the IC and a part of the core that is adapted to contact a heat dissipation member is smaller than a distance between the center of the IC and a central axis of the coil.